



**U.S. DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
**NATIONAL MARINE FISHERIES SERVICE/NOAA FISHERIES**  
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### **CRUISE REPORT<sup>1</sup>**

**VESSEL:** *Oscar Elton Sette*, Cruise 03-07 (OES-08)

**PERIOD:** 19 August – 30 September 2003

**AREA OF OPERATION:** Commonwealth of the Mariana Islands and Guam

**TYPE OF OPERATION:** Personnel from the Coral Reef Ecosystem Division, Pacific Islands Fisheries Science Center, National Marine Fisheries Service, NOAA, conducted reef assessment/monitoring in waters surrounding the Commonwealth of the Mariana Islands and Guam.

#### **ITINERARY:**

- 19 Aug Deployed Coral Reef Early Warning System (CREWS) buoy in Managaha Reserve in Saipan Lagoon.
- 20-21 Aug Conducted shipboard orientation, dive safety management drills, and fire and abandon ship drills. Conducted fish and benthic Rapid Ecological Assessment (REA) team and towed-diver protocol training dives in Saipan.
- 22 Aug Departed Saipan to begin cruise. Conducted six towed-diver habitat/fish surveys, two towed snorkeler turtle surveys, three benthic and two fish REA surveys along the north and east sides of Saipan. Conducted 20 shallow water conductivity-temperature-depth (CTD) casts around Saipan. Deployed settlement plates around anchor for CREWS buoy. Conducted two Tethered Optical Assessment Device (TOAD) camera drop surveys, four acoustic Doppler current profiler (ADCP) transects, and four deepwater CTDs around Saipan.
- 23 Aug Conducted six towed-diver habitat/fish surveys, three towed-diver turtle surveys, three benthic and fish REA surveys, nine shallow water CTDs, four TOAD camera drops, and one bioacoustic survey around Tinian. Rescued four distressed recreational divers from exposed rocky shoreline along windward side of Tinian after their small boat flooded and capsized. Departed Saipan/Tinian around 2200 en route to Sarigan Island. Deployed surface velocity program (SVP) drifter.
- 24 Aug Arrived Sarigan Island. Conducted six towed-diver habitat/fish surveys and three towed-diver turtle/fish surveys around island perimeter. Conducted three fish and benthic REA surveys along leeward side. Deployed subsurface temperature recorder on leeward side.



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<sup>1</sup> PIFSC Cruise Report CR-06-006  
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Conducted geodetic surveys on west side of island. Conducted nine shallow water CTDs, three TOAD camera drops, four deepwater CTDs, four ADCP transects, and two bioacoustic survey

- 25 Aug Arrived Zealandia Bank. Conducted bathymetric survey around two pinnacles. Conducted two fish and benthic surveys around pinnacles. Deployed wave and tide recorder. Conducted two TOAD camera drops, two bioacoustic surveys, four deepwater CTDs, and four ADCP transects around Zealandia Bank.
- 26 Aug Arrived Pagan Island. Conducted six towed-diver habitat/fish surveys, four towed-diver turtle surveys, two fish and one benthic REA surveys, and several shallow water CTDs around northeast quadrant of Pagan. Squally weather prevented additional REA surveys from being completed along this exposed shore. The geodetic shore party was unable to land on the east side of the island. Conducted five TOAD camera drop surveys along southwest side of Pagan. Conducted two deepwater CTDs and two ADCP transects around perimeter.
- 27 Aug Arrived Agrihan Island. Conducted six towed-diver habitat/fish surveys, three towed-diver turtle/fish surveys, three fish and benthic REA surveys, and several shallow water CTDs around east, south, and southwest sides of Agrihan. Conducted geodetic surveys on southwest side of island. Conducted three TOAD camera drop surveys along east and south sides of Agrihan. Conducted four deepwater CTDs, four ADCP transects, and two bioacoustic transects.
- 28 Aug Departed Agrihan en route to Stingray Shoals. Deployed SVP drifter.
- 29 Aug Conducted bathymetric survey of previously uncharted Stingray Shoals. Conducted four towed-diver habitat/fish and turtle surveys, two fish and benthic REA surveys, five TOAD camera drop surveys, and three bioacoustic surveys. Results of the surveys at Stingray Shoals are not included in this report.
- 30 Aug Arrived Uracas Island at 1430. Conducted two towed-diver fish/habitat surveys, one bathymetric survey, one fish and benthic REA survey, and eight shallow water CTDs. Attempted several TOAD surveys but could not safely get close enough to island to reach adequate depths. Attempted, without success, to locate Uracas Banks (charted to be about 8 nmi north of Uracas Island with water depths of 70 and 76 fathoms). Neither of two charted banks was located. Conducted three deepwater CTDs and four bioacoustic surveys.
- 31 Aug Conducted six towed-diver habitat/fish surveys and four towed-diver turtle surveys around perimeter of Uracas Island. Conducted three benthic and fish REA surveys. Deployed subsurface temperature recorder #3932718-1064 at position 20°32.227'N, 145°53.860'E in 1.5 m of water. Departed Uracas Island. Conducted bathymetric survey and four bioacoustic surveys over unnamed bank 8 nmi southeast of Uracas Island. Charted depth of bank is 76 fathoms; surveyed depth was found to be 54 m. Conducted two TOAD drop camera surveys over unnamed bank. Transited to Supply Reef.
- 1 Sep Conducted shallow water bathymetric survey of Supply Reef from small boat, one fish and benthic REA survey, and one partial towed-diver habitat/fish survey over Supply Reef. Deployed wave and tide recorder # 2632718-0377 at position 20°08.405'N, 145°05.915'E. Conducted shipboard bathymetric survey around Supply Reef. No shallow soundings were found for the second charted position of Supply Reef. Conducted two bioacoustic surveys, two TOAD camera drop surveys, and four deepwater CTDs around Supply Reef. Departed

Supply Reef, deployed SVP drifter #29108 at position 20°11.071'N, 145°04.611'E, and transited to Maug Islands.

- 2 Sep Arrived at Maug Island at 0700. Conducted 6 towed-diver habitat/fish surveys, 3 towed-diver turtle surveys, 3 fish and benthic REA surveys, 13 shallow water CTDs around Maug Islands. Conducted two bioacoustic surveys, four TOAD camera drop surveys, two ADCP transects, and two deepwater CTDs around Maug.
- 3 Sep Conducted 6 towed-diver habitat/fish surveys, 3 towed-diver turtle surveys, 3 fish and benthic REA surveys, and 12 shallow water CTDs around Maug Islands. Deployed SST buoy #268-018 inside the lagoon at Maug on the northwest side of East Island near the northeast pass at position 20°01.752'N, 145°13.930'E in 7.5 m of water. Deployed subsurface temperature recorder #3932718-1049 in the shallow reef on the west side of West Island at position 20°01.065'N, 145°12.464'E in 2.5 m of water. Conducted two bioacoustic surveys, three TOAD camera drop surveys, two ADCP transects, and two deepwater CTDs around Maug.
- 4 Sep Conducted four towed-diver habitat/fish surveys, three towed-diver turtle surveys, three fish and benthic REA surveys, eight shallow water CTDs, and two video surveys around Maug Islands. Conducted three TOAD camera drop surveys in Maug lagoon and two ADCP transects around Maug. Departed Maug and transited to Asuncion Island.
- 5 Sep Arrived Asuncion Island at 0700. Conducted six towed-diver habitat/fish surveys, three towed-diver turtle surveys, three fish and benthic REA surveys, and eight shallow water CTDs around Asuncion Island. Conducted six TOAD camera drop surveys, two ADCP transects, and one deepwater CTD around Asuncion. Deployed subsurface temperature recorder #3932718-1049 at position 19°41.605'N, 145°23.383'E in 3.5 m of water. The CTD tow-blocked during retrieval because of a winch controller failure causing the wire to part and the CTD and rosette to crash to the deck, severely damaging the frame and block.
- 6 Sep Arrived Agrihan Island. Conducted six towed-diver habitat/fish surveys, two towed-diver turtle surveys, three fish and benthic REA surveys, and eight shallow water CTDs around the northwest and west sides of Agrihan Island. Deployed one subsurface temperature recorder #3932718-1042 at lat. 18°45.995'N, long. 145°38.296'E in 2 m of water. Conducted six TOAD camera drop surveys, two ADCP transects, and three bioacoustic surveys around Agrihan. Transited to Pagan Island.
- 7 Sep Arrived Pagan Island. Conducted six towed-diver habitat/fish surveys, three towed-diver turtle surveys, three fish and benthic REA surveys, and eight shallow water CTDs around the northwest and west sides of Pagan Island. Deployed SST buoy #268-019 at lat. 18°07.647'N, long. 145°45.437'E in 5 m of water. Conducted three TOAD camera drop surveys, two ADCP transects, one bioacoustic survey, and one deepwater (350 m) CTD around Pagan.
- 8 Sep Conducted six towed-diver habitat/fish surveys, three towed-diver turtle surveys, three fish and benthic REA surveys, and eight shallow water CTDs around the southwest and southeast sides of Pagan Island. Departed for Saipan at 1800 because of a medical/personnel emergency.
- 9 Sep Anchored off Saipan at 1130. Onloaded six 55-gallon drums of gasoline for small boats. Disembarked one crewmember with Officer escort. Weighed anchor at 1800. Conducted seven TOAD camera drop surveys of Garapan anchorage areas off west Saipan. Collected surface chlorophyll samples. Transited to Anatahan Island.

- 10 Sep Arrived at Anatahan Island at 0700. Observed surface slick and bubbling off northeast coast of Anatahan Island. Conducted 6 towed-diver habitat/fish surveys, 3 fish and benthic REA surveys, 24 shallow water CTDs, 2 aborted towed-diver turtle/fish surveys. Visibility was extremely poor (0.5 – 2.0 m) at most sites causing difficult working conditions for all diving operations. Deployed subsurface temperature recorder #3932718-1067 at lat. 16°20.077'N, long. 145°38.719'E in 5.8 m of water. Conducted five TOAD camera drop surveys, one ADCP transects, and three bioacoustic surveys around Anatahan. Transited to Guguan Island.
- 11 Sep Arrived at Guguan Island at 0700. Conducted 6 towed-diver habitat/fish and 3 towed-diver turtle/fish surveys around entire island, 3 fish and benthic REA surveys, 10 shallow water CTDs, 3 TOAD camera drop surveys, 2 bioacoustic surveys, 2 deepwater CTDs, and 4 ADCP transects. Deployed subsurface temperature recorder #3932718-1068 at lat. 17°18.440'N, long. 145°49.884'E in 6 m of water. Transited to Alamagan Island.
- 12 Sep Arrived at Alamagan Island at 0700. Conducted 6 towed-diver habitat/fish and 3 towed-diver turtle/fish surveys around entire island, 3 fish and benthic REA surveys, 1 reef fish collection dive, 14 shallow water CTDs, 6 TOAD camera drop surveys, 2 bioacoustic surveys, 2 deepwater CTDs, and 4 ADCP transects. Deployed subsurface temperature recorder #3932718-1110 at lat. 17°37.124'N, long. 145°49.404'E in 3 m of water. Transited to Pagan Island.
- 13 Sep Arrived at Pagan Island at 0700. Conducted three towed-diver habitat/fish and three towed-diver turtle/fish surveys along southeast shore, one deep fish and benthic REA survey, one shallow benthic REA survey, one reef fish collection dive, six shallow water CTDs, and one bioacoustic survey. Departed Pagan Island en route to Pathfinder Bank.
- 14 Sep Arrived at Pathfinder Bank at 0630. Conducted bathymetric survey, four towed-diver habitat/fish and turtle surveys, two fish and benthic REA surveys, four TOAD drop camera surveys, one bioacoustic survey, and one deepwater CTD. Departed Pathfinder Bank en route to Arakane Reef. Deployed SVP satellite-tracked drifter #29103 at position 16 26.594'N 143 05.160'E.
- 15 Sep Arrived at Arakane Reef at 0600. Conducted bathymetric survey, six towed-diver habitat/fish and turtle surveys, two fish and benthic REA surveys, four TOAD drop camera surveys, two bioacoustic surveys, two deepwater CTDs, and two ADCP transects. TOAD suffered minor damage during collision with bottom. Departed Arakane Reef en route to Esmeralda Bank.
- 16 Sep Arrived at Esmeralda Bank at 1430. Conducted bathymetric surveys, four TOAD drop camera surveys, two deepwater CTDs, and two ADCP transects. Departed Esmeralda Bank at 0530 en route to Tatsumi Reef.
- 17 Sep Arrived at Tatsumi Reef at 0730. Conducted two towed-diver habitat/fish surveys and one towed-diver turtle survey over Tatsumi Reef. Transited to Aguijan Island. Conducted 4 towed-diver habitat/fish surveys, 2 towed-diver turtle/fish surveys, 2 fish and benthic REA surveys, and 12 shallow water CTDs. Deployed subsurface temperature recorder #3932718-1111 at lat. 14°50.101'N, long. 145°31.958'E in 3.8 m of water. Disembarked Mike Trianni, Kate Moots, Robert Schroeder, and Ken Cochrane to Division of Fish and Wildlife 27-ft vessel for transit to Saipan to conduct fish REA surveys. Conducted three TOAD drop camera surveys. Departed Aguijan en route to Anatahan Island.

- 18 Sep Arrived at Anatahan Island at 0700. Conducted six towed-diver habitat/fish surveys, three towed-diver turtle/fish surveys, and three benthic REA surveys. Deployed sursurface temperature recorder #3932718-1113 at lat. 16°19.975'N, long. 145°42.162'E in 3.5 m of water. Departed Anatahan at 1715 en route to Saipan. Arrived Saipan at 2330 to embark Robert Schroeder, Michael Trianni, and Kate Moots. Departed Saipan en route to Rota Island.
- 19 Sep Arrived Rota Island at 0730. Conducted six towed-diver habitat/fish surveys, three turtle/fish surveys, three fish and benthic REA surveys, four TOAD drop camera surveys, two bioacoustic surveys, two deepwater CTDs, and four ADCP transects.
- 20 Sep Conducted six towed-diver habitat/fish surveys, three turtle/fish surveys, three fish and benthic REA surveys, six TOAD drop camera surveys, three bioacoustic surveys, and one ADCP transect. Deployed sea surface temperature buoy #268-013 at lat. 14°06.779'N, long. 145°10.002'E in 12.7 m of water. Deployed SVP satellite-tracked drifter #29099 at position 13°59.418'N 145°00.313'E. Departed Rota en route to Guam.
- 21 Sep Arrived Guam at 0830 to conclude Leg I. Cleared Customs, Immigration and Agriculture at ~1000 to commence Guam welcoming reception. Conducted interviews for KGTF-TV Guam for Public TV kids environmental education. Attended Fiesta Reception hosted by the Guam Fishermen's Co-op and the Western Pacific Regional Fishery Management Council in honor of the officers, crew, and scientists aboard the *Oscar Elton Sette*.
- 23 Sep Embarked Dwayne Minton and Mark Capone. Commenced Leg II operations at 0730. Ship departed Apra Harbor at 1000. Conducted 6 towed-diver habitat/fish surveys, 3 towed-diver turtle/fish surveys, 3 benthic and fish REA surveys, and 10 shallow water CTDs around the southwest and south quadrant of Guam. Conducted four TOAD drop camera surveys, one deepwater CTD, and two bioacoustic surveys. Departed Guam en route to Santa Rosa Reef.
- 24 Sep Arrived at Santa Rosa Reef at ~0630. Initiated reconnaissance bathymetric survey. Because of adverse weather and sea conditions, departed Santa Rosa Reef en route to Guam. Conducted three towed-diver habitat/fish surveys, two fish and benthic REA surveys, two towed-diver turtle/fish surveys, and five shallow water CTDs along the northwestern shore of Guam. Deployed sea surface temperature buoy #268-014(?) in the Tumon Bay Marine Reserve at lat. 13°31.141'N, long. 144°47.867'E in 12.4 m of water. Transited to 11-mile bank and conducted three TOAD camera drop surveys there. Transited to Galvez Bank to conduct reconnaissance bathymetric survey. Transited back to east side of Guam.
- 25 Sep Arrived at Guam at 0700. Conducted six towed-diver habitat/fish surveys, three towed-diver turtle/fish surveys, two fish and benthic REA surveys, and seven shallow water CTDs along the east and north sides of Guam. Conducted two bioacoustic surveys, four TOAD camera drop surveys, one deepwater CTD, and one ADCP transect. Attempted to locate 100-fathom bank north of Guam but was without success.
- 26 Sep Conducted five towed-diver habitat/fish surveys, three towed-diver turtle/fish surveys, two REA surveys, and seven shallow water CTDs. Attempted to survey Icehouse Bank based on positions provided by local fishermen and agency representatives. Bank was not located near reported positions. Conducted bioacoustic transect. Transited to Galvez Bank.

27 Sep	Arrived at Galvez Bank at 0530. Conducted bathymetric survey. Weather and sea conditions too rough to launch small boats. Conducted 11 TOAD camera drop surveys and 1 ADCP transect around Galvez Bank. Transited to Santa Rosa Reef.
28 Sep	Arrived at Santa Rosa Reef at 0600. Conducted bathymetric survey. Conducted three towed-diver habitat/fish surveys and two fish and benthic REA surveys. Deployed Ocean Data Platform #27-007 at position 12°50.2916'N, 144°25.0704'E in 19.8 m of water. Conducted seven TOAD camera drop surveys, two bioacoustic surveys, one deepwater CTD, and an ADCP transect around Santa Rosa Reef. Deployed SVP satellite-tracked drifter #29100 at position 12°54.626'N, 144°24.958'E.
29 Sep	Arrived Guam to end cruise. Disembarked Leberer, Tibbatts, Wusstig, Capone, Minton, Hoeke, Timmers, Zgliczynski, Laughlin, Bak, and Kolinski. Loaded AHI multibeam survey launch on board for transit back to Honolulu.
30 Sep	Disembarked Brainard, Holzwarth, Vroom, Schroeder, Tanay, Minkel, and Rooney.

### CRUISE STATISTICS:

Towed Diver Habitat/Fish Surveys	161	(~400 km of habitat, 134 hrs of video, ~32,000 digital photos)
Towed Diver Turtle/Fish Surveys	82	(~178 km of habitat)
Non-tow Turtle Surveys	5	
Fish Rapid Ecological Assessments	87	
Fish collection surveys	3	(Maug, Alamagan, Pagan)
Benthic Rapid Ecological Assessments	86	
CREWS buoys deployed	1	(Saipan)
SST buoys deployed	4	(Pagan, Maug, Rota, Guam)
Ocean Data Platforms deployed	1	(Guam)
Wave and Tide Recorders deployed	2	(Zealandia Bank, Supply Reef)
Subsurface Temperature Recorders Deployed	11	(Sarigan, Uracas, Maug, Asuncion, Agrihan, Pagan, Anatahan (2), Guguan, Alamagan, Aguijan)
TOAD drop camera surveys	126	
QTC acoustic habitat surveys	136	
Bioacoustic Transects	52	210.9 km
Deepwater CTDs (to 500 m)	46	
Shallow water CTDs (to 30 m)	227	
ADCP transects	67	777.8 km of transects
SVP drifter deployments	5	
Bathymetric surveys (ship)	6	(Zealandia Reef, Stingray Shoals, Supply Reef, Pathfinder Bank, 2 unnamed banks)
Multibeam bathymetric surveys (AHI)	6	(Saipan, Tinian, Marpi, Tatsumi, Rota, Guam) covering 244.2 sq km
Geodetic surveys	10	(Sarigan, Pagan, Agrihan, Asuncion, Maug, Uracas, Anatahan, Guguan, Alamagan, Aguijan)
SCUBA dives	1,204	dives

### RESULTS:

See Appendices A-J.

### SCIENTIFIC PERSONNEL:

Scientific Party – Leg I:

Rusty Brainard, Ph.D., Chief Scientist, Towboard Team - Habitat, NOAA Fisheries, Pacific Islands Fisheries Science Center (PIFSC), Coral Reef Ecosystem Division (CRED)  
 Molly Timmers, Towboard Team - Habitat, University of Hawaii (UH), Joint Institute for Marine and Atmospheric Research (JIMAR), PIFSC, CRED  
 Brian Zgliczynski, Towboard Team - Fish, NOAA Fisheries, PIFSC, CRED  
 Joe Laughlin, Towboard Team -Fish, UH, JIMAR, PIFSC, CRED  
 Robert Schroeder, PhD, Fish Team, UH, JIMAR, PIFSC, CRED  
 Mike Trianni, Fish Team, Commonwealth of the Northern Mariana Islands, Division of Fish and Wildlife (DFW) (leg I only)  
 Kate Moots, PhD, Fish Team, CNMI, DFW (leg I only)  
 Peter Vroom, PhD, Benthic Team - Algae, UH, JIMAR, PIFSC, CRED  
 Fran Castro, Benthic Team - Algae/Inverts, CNMI, DEQ (leg I only)  
 Peter Houk, Benthic Team - Corals, CNMI, DEQ (leg I only)  
 Trina Leberer, Benthic Team - Corals/Inverts, Guam, DAWR  
 Machel Malay, Benthic Team - Inverts, Univ. of Florida (leg I only)  
 Stephani Holzwarth, Mooring/Tow Team - Fish, UH, JIMAR, PIFSC, CRED  
 Steve Kolinski, PhD, Mooring/Tow Team - Turtles, UH, JIMAR, Pacific Islands Regional Office (PIRO)  
 Ron Hoeke, Mooring/Tow Team - Oceanography, UH, JIMAR, PIFSC, CRED  
 John Rooney, PhD, Habitat Mapping Team - Towed Camera, UH, JIMAR, PIFSC, CRED  
 Ken Cochran, Habitat Mapping Team - GIS, CNMI, CRM  
 David Minkel, Habitat Mapping Team - Geodetic, NOAA – NOS - NGS  
 Dennis Tanay, Habitat Mapping Team - Bioacoustics, UH  
 Sun He Bak, Data Manager, UH, JIMAR, PIFSC, CRED  
 Phil White, Senior Survey Tech, NOAA ship *Oscar Elton Sette*  
 Brent Tibbatts, Fish Team, Guam – DAWR (Leg II only)  
 Mark Capone, Fish Team, University of Guam Marine Laboratory (Leg II only)  
 Shawn Wusstig, Benthic Team - Algae, Guam – DAWR (Leg II only)  
 Dwayne Minton, Ph.D., Benthic Team - Inverts, Guam – NPS (Leg II only)  
 ENS Kelley Stroud, Benthic Team - corals, NOAA ship *Oscar Elton Sette*  
 ENS Monty Spencer, Benthic Team - corals, NOAA ship *Oscar Elton Sette*  
 Scott Ferguson, Habitat Mapping Team, R/V AHI, UH, JIMAR, PIFSC, CRED  
 Joyce Miller, Habitat Mapping Team, R/V AHI, UH, JIMAR, PIFSC, CRED  
 Paul Johnson, Habitat Mapping Team, R/V AHI, UH – Hawaii Research Mapping Group

(/s/Russell E. Brainard)

Submitted by: \_\_\_\_\_

Russell E. Brainard, Ph.D.  
 Chief Scientist

(/s/Samuel G. Pooley)

Approved by: \_\_\_\_\_

Samuel G. Pooley, Ph.D.  
 Science Director, Pacific Islands Fisheries Science Center

Attachments

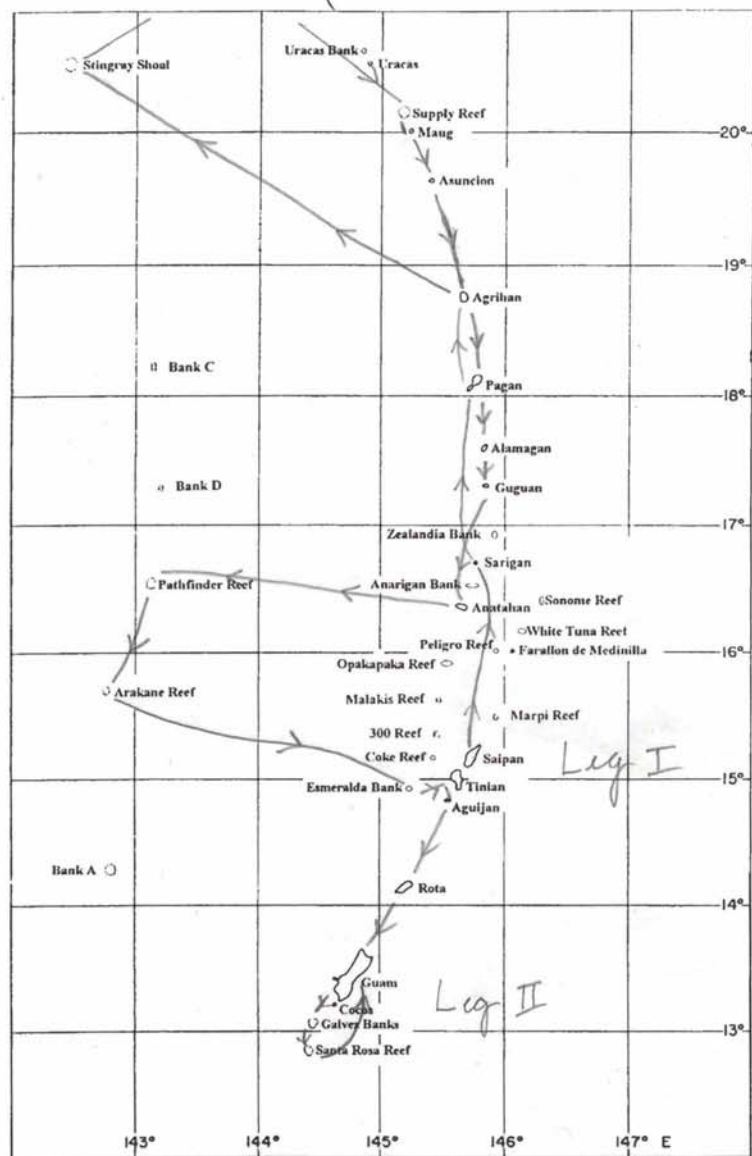


Figure 1.—The Mariana Archipelago. Track of the NOAA ship Oscar Elton Sette Cruise OES-03-07 (OES-08) Leg I, August 19 to September 21, 2003. Leg II, September 23-29, 2003.